A Comprehensive Assessment of the Central Puget Sound (King County) Nearshore Ecosystem: Historic Changes, Data Gaps and Pending Threats

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Extended Abstract

Introduction

A resource assessment was recently completed for nearshore habitats within King County's Watershed Resource Inventory Areas (WRIAs) 8 and 9, which comprise most of the coastline between Tacoma and Everett, as well as Vashon and Maury Islands (under WRIA 15 jurisdiction) (Battelle and others 2001). Despite numerous existing studies and data sets on a variety of nearshore topics within the previously described study area, there has been no comprehensive summary of this information to date. The primary objective of this study was to provide a current, reconnaissance-level understanding of major ecological conditions, processes, and resources within the region's nearshore habitats for the purpose of guiding watershed planning and salmon recovery actions. This regional assessment is also designed to provide direction for future technical work through identification of data gaps, and serve as a resource to researchers, planners and managers dealing with nearshore issues in WRIAs 8 and 9.

Defining the Nearshore

For the purposes of this report, we use a functional basis for defining the nearshore zone, which encompasses all habitats wherein direct functional interactions (e.g., sediment supply, primary production and export) occur between upland and marine habitats. Thus, the nearshore environment spans a continuum from the lower limit of the photic zone (approximately, minus 30 m MLLW) landward, including coastal landforms such as bluffs, the backshore, sand spits, coastal wetlands, and marine riparian habitats on or adjacent to any of these areas.

Scope of Study Topics

This report synopsizes and identifies major gaps in the existing nearshore literature on ecological conditions, habitats, processes, and resources within the prescribed study area. Features specifically addressed, include:

- Oceanography and physical processes
- Nutrient dynamics and water properties
- Primary productivity dynamics
- Food web interactions
- Major habitat distributions (e.g., eelgrass meadows, kelp forests, tidal marshes)
- Shoreline conditions (e.g., shoreline armoring, dredging, filling, sediment contamination)
- Salmonid and finfish distribution
- Shellfish distribution

Summary Findings and Conclusions

Summary findings and conclusions from the study are outlined below. For findings within specific topic areas, we refer readers to the primary document (Battelle and others 2001), cited in the Reference section.

- The nearshore ecosystem plays a critical role in support of salmon as well as a wide variety of other biological resources, many of which are important to the people of the region for commercial, recreational, cultural, aesthetic, and other social values.
- The viability of the nearshore system processes that support these resources has been damaged and continues to be threatened by a wide variety of human-induced changes. Shoreline modifications have occurred over an exceedingly high percentage (75 to 87%) of WRIAs 8 and 9 nearshore habitats, and represents one of the larger impacts on the nearshore ecology of the region.
- The cumulative effects of multiple stressors, or individual stressors over various temporal and spatial scales, on the nearshore system are unstudied.
- There are numerous data gaps in our understanding of the nearshore ecosystem that directly inhibit or weaken our ability to make informed decisions regarding management and restoration of the system. Monitoring programs are limited and have been inadequate for providing the level of scientific information necessary for informed resource management decisions.
- There is a general lack of coordination in the collection, analysis, and dissemination of nearshore data.
- The nearshore system of Puget Sound needs more focused attention with funded research.

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Copies of the completed report can be obtained by contacting Jim Brennan, King County Department of Natural Resources at (206) 296.8341; email: jim.brennan@metrokc.gov; copies of the report are expected to be web accessible in the near future through a link at http://dnr.metrokc.gov/wlr/waterres/marine/marine.htm .

References

Battelle Marine Sciences Laboratory, Pentec Environmental, Striplin Environmental Associates, Shapiro Associates, Inc., and King County Department of Natural Resources. 2001. State of the Nearshore Ecosystem: Eastern Shore of Central Puget Sound, Including Vashon and Maury Islands (WRIAs 8 and 9). Prepared for King County Department of Natural Resources, Seattle, Washington. March 2001, 265+ pp.